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(71) Applicant and

(72) Inventor: KANG, Yong-Ho [KR/KR]; 105-105, Hanmaru(Lucky) apt., Doonsan-dong, Seo-ku, Taejon 302-120 (KR).

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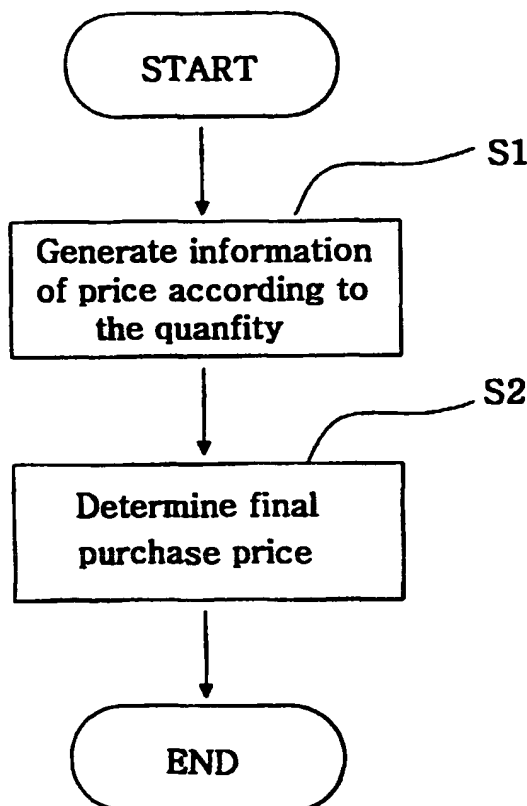
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(74) Agents: YIM, Suk-Jae et al.; 823-1, Poonglim bldg., Yeoksam-dong, Kangnam-ku, Seoul 135-080 (KR).

(54) Title: A METHOD OF PROVIDING AN OPTIMAL PURCHASE PRICE IN ELECTRONIC COMMERCE



(57) Abstract: The present invention relates to the method for providing optimum purchase price in electronic commerce, carried out on the Internet, which is a system for determining the lowest price and final purchase price adjusted downward step by step by means combining bidding, reverse auction and cooperative buying methods. More particularly, the present invention comprises procedure 1, which generates information of the lowest price to the purchase quantity, and procedure 2 for determining the final purchase price by providing the lowest price information generated by procedure 1 to a plurality of purchasers. Because a purchaser is informed beforehand of the price of a product, lowered step by step as quantity of purchase increase, the present invention has the effect of allowing a purchaser to request a purchase at a desired price. Further, because the final price is determined by the purchase amount, which is accumulated by purchase requestors, the present invention has the effect of allowing a purchaser to buy a product at the desired price or below.

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A method of providing an optimal purchase price in electronic commerce

Technical Field

5 The present invention relates to the method for conducting electronic commerce on the Internet, and more particularly to the method for providing optimum purchase price to purchasers by exploiting advantages of various forms of electronic commerce on the Internet, such as bidding, reverse auction and cooperative buying.

10 **Background Art**

Internet is known to be originated from ARPANET, which is a network system for sharing information regarding military research of the U.S. Pentagon. Recently, as computers are widely used, Internet, the computer network system
15 interconnected around the world, has become enormously gigantic but efficient media for searching and providing information. Internet is used in various ways including e-mail, news group, file transfer, information exchange and search, and as the number of networks connected to Internet and of users of the Internet increases, a lot of web sites are being constructed with commercial purpose of obtaining
20 profits from Internet. Among them, the number of sites for conducting electronic commerce is growing rapidly.

Electronic commerce is a system for trading goods and services in which all or part of the trade is carried out by electronic method such as exchange of electronic documents. In electronic commerce, as in the real world commerce, all concerned
25 can participate through network. Examples using electronic commerce are cyber shopping mall, auction, reverse auction and cooperative buying.

The most general form of electronic commerce is cyber shopping mall, which is the virtual department store constructed on the Internet. Cyber shopping mall, such as Amazon (<http://www.amazon.com>), provides purchasers with information of
30 goods they sell so that purchasers can buy goods using this information. The method of payment may be GIRO or credit card. Another form of electronic commerce is auction. In general form of auction, final price is determined to the highest price through the competition of purchasers in predetermined process, after seller specifies initial price. The process of reverse auction or Dutch auction is just
35 the opposite. First, purchaser specifies desired purchase price for the goods and then sellers compete by providing lowered selling price and the goods of the seller who

provided the lowest price is sold to the purchaser. Similar to the above method of reverse auction is the method employed by Priceline (<http://www.priceline.com>), wherein purchaser offers desired price and then Priceline purchases goods at this price for the purchaser. Another form of electronic commerce is cooperative buying, where seller get profit by selling products in large amounts with small profits using the concept of a quick-returns policy. In this form of electronic commerce, purchasers in group can buy goods with low price.

Recently, electronic commerce which combines above basic forms of electronic commerce is being conducted. As a example, Korean company Auction Co. (<http://www.auction.co.kr>) conducts various forms of cooperative buying including auction, reverse auction, brand auction and synergy auction. In brand auction, initial price is specified on the brand name products of certain company which is guaranteed by Auction Co. and purchasers are invited to join the purchaser group, and this first price is lowered as the number of purchasers is increased these prices being displayed in real time. In synergy auction, the price of the goods is lowered in real time as the number of buying offers increases. In this method, purchasers can buy goods at low price and seller can sell their product in a large scale at one time.

There are other sites which provides services in the form of cooperative buying such as Internet Cooperative Purchase (<http://www.gonggoo.co.kr>) and Organization for Small Company (<http://joylet.com>). In these services, price list which is lower than market price is offered for limited amount of goods. Then, transaction is completed when there are requests for the specified amounts.

This general form of bidding, however, is advantageous to seller as price rises, but purchaser must wait a long time to win the contract. As a result, this form is seller-driven rather than purchaser-driven.

Also, general reverse auction is advantageous to purchaser since he can offer goods and prices he wants. However, sellers should compete to sell their products and there is a risk of selling goods below cost. So this method may be considered purchaser-driven rather than seller-driven.

In the conventional cooperative buying method, since price is set to lower price about single limited amount, there is a possibility of not wining a transaction when purchase amount exceeds selling amount, though there is buying offer. In the synergy auction of Auction Co. and cooperative buying of eBay (<http://www.eBay.com>), which are other form of cooperative buying, the disadvantage of conventional cooperative buying is overcome by decreasing the price in real time as the number of purchasers is increased and by making

transaction after predetermined time period closes. In these methods, however, information is not provided about how much the price will be decreased as the number of purchasers increases. So, these methods are seller-driven form of electronic commerce, which does not provide optimum price for the purchasers.

5 Also, purchaser cannot provide buying offer at the desired price and can request buying offer only. As a consequence, when the number of purchasers is small, transaction is completed without lowering the price, so not providing the advantage of cooperative buying. For example, when there is only one purchaser, the purchaser must buy good at the price provided by the seller without taking the

10 advantage of cooperative buying.

Disclosure of the Invention

It is an object of the present invention to provide a purchaser with the method for

15 providing optimum purchase price in electronic commerce.

It is another object of the present invention to provide a seller with the method to determine the lowest selling price to the prospective purchase quantity, overcoming the disadvantage of prior art reverse auction method.

It is still another object of the present invention to provide a purchaser with the

20 lowest price list which is adjusted downward step by step so that purchaser can determine optimum purchase price.

It is yet another object of the present invention to overcome disadvantage of conventional cooperative buying by striking a bargain on the basis of final purchase price step at the moment final purchase price is determined.

25 To achieve above objects, one feature of the present invention is to provide a purchaser with information about minimum price to the purchase quantity.

Another feature of the present invention is to receive purchase offer from a plurality of purchasers who have been provided with information about minimum price per purchase quantity and then provide the purchaser with information about

30 possible purchase price which is adjusted downward.

Specific feature of the one embodiment of the present invention comprises procedure 1, which generates information about minimum purchase price to the purchase quantity, and procedure 2, which determines final purchase price by providing the purchasers with the information generated by procedure 1.

35 Specific feature of the electronic commerce according to the present invention is that said procedure 1 comprises step 1, wherein web server requests information

about purchase price to the purchase quantity of certain goods from a plurality of sellers, step 2, wherein web server is provided with information about purchase price by the purchase quantity from sellers as a result of step 1, and step 3, wherein web server generates final purchase price per purchase quantity by using the information collected by step 2.

Another specific feature of the electronic commerce according to the present invention is that said procedure 1 comprises step 1, wherein web server sends information about the number of prospective purchasers of certain goods to a plurality of sellers, step 2, wherein web server is provided with information about bidding or reverse auction from sellers when predetermined conditions are met after finishing step 1, and step 3, wherein web server generates final purchase price according to the number of purchasers at the moment of completing step 2.

Still another specific feature of the electronic commerce according to the present invention is that said procedure 2 comprises step 1, wherein web server sends information about purchase price to the purchase quantity generated by procedure 1 to a plurality of sellers, step 2, wherein web server is provided with information about purchase offer from purchaser systems for a limited time period, and step 3, wherein web server generates final purchase price by comparing accumulated number of purchasers which is collected by step 2 and minimum purchase price per purchase quantity generated by procedure 1.

Brief Description of the Drawings

Fig. 1 is a block diagram illustrating the construction of electronic commerce system of present invention,

Fig. 2 is a flow chart illustrating the method of electronic commerce of present invention,

Fig. 3 is a flow chart illustrating one embodiment of procedure 1 of Fig. 2, and,

Fig. 4 is a flow chart illustrating the other embodiment of procedure 1 of Fig. 2.

Best Mode for Carrying Out the Invention

The method for electronic commerce according to the present invention will now be described with reference to the attached drawings. Fig. 1 is a block diagram illustrating the structure of participants and system that carry out the method of

electronic commerce according to the present invention. As shown in the figure, the present invention comprises a plurality of sellers 11, 12, 13, ..., 1m, server system (hereinafter referred to as server) 20 and a plurality of purchasers 31, 32, 33, ..., 3n. Server 20 includes seller data base 21 which includes various information on a plurality of sellers and member purchaser data base 23 which includes information on a plurality of member purchasers. Although a plurality of sellers are illustrated in this embodiment, seller participants can be only one seller in the case of a single brand goods purchase. Also, above sellers can be represented as a plurality of marketing department of a company or one seller.

Fig. 2 is a flowchart illustrating the process of electronic commerce according to the present invention. As shown in the figure, electronic commerce according to the present invention comprises two procedures. In the procedure 1, S1, the information of minimum price according to the purchase quantity is generated, and in the procedure 2, S2, final purchase price is determined by providing the information of minimum price to a plurality of purchasers.

Procedure 1 can be performed in two ways. Fig 3 is a flowchart which illustrates the process of generating information of minimum price according to one embodiment of the procedure 1 of the present invention, which actually is a series of bidding process. Server 20 sends message requiring information of price according to the purchase quantity of predetermined goods to a plurality of sellers 11, 12, 13, 1m (S111). According to the message requiring information of price, each of the sellers 11, 12, 13, 1m provides information of price according to the purchase quantity of predetermined goods to the server 20. As can be understood, the price will be decreased as the purchase quantity is increased (S112).

Server 20 calculates minimum purchase price per each purchase quantity by comparing price information sent by each seller (S113). Table 1 is an example of price information provided by three sellers A, B and C.

Table 1

Step	Quantity	A	B	C
1	1~5	A-1	B-1	C-1
2	6~10	A-2	B-2	C-2
3	11~15	A-3	B-3	C-3

4	16~20	A-4	B-4	C-4
...
K	91~100	A-K	B-K	C-K

In this example, a change of quantity is set to 5, but as readily understood, this representation is illustrative only and can be represented as the difference of weight according to the goods. As shown in table 1, minimum price per each step is determined using the price to the purchase quantity (A-1, A-2, ..., A-K, B-1, B-2, ..., B-K and C-1, C-2, ..., C-K) provided by each seller. For example, in step 1 of amount range 1~5, when the lowest price is B-1 of seller B among the price A-1, B-1 and C-1, B-1 is selected as the lowest price of step 1. Similarly, when the lowest price is A-2 of seller A, at the step of amount range 6~10 among the price A-2, B-2 and C-2, A-2 is selected as the lowest price of step 2.

By illustrating real price in table 2, actual situation will be described.

Table 2

Step	Quantity	A	B	C	Minimum price	Determined seller
1	1~5	150,000	150,000	160,000	150,000	?
2	6~10	145,000	143,000	142,000	142,000	C
3	11~20	120,000	140,000	141,000	120,000	A
4	21~30	131,000	130,000	130,000	130,000	B
...
K	91~100	110,000	100,000	90,000	90,000	C

As can be seen in table 2, there may be some questions as follows.

- 1) There are two prices which are lowest and same, in step 1.
- 2) The lowest price in step 3 is lower than the lowest price in step 4 since A company offered a very low price for being awarded.

To solve these problems, certain rules must be manifested in an agreement with member purchaser and seller as follows.

- When there are same lowest prices as in 1),
- a) a seller with the lowest price when summed at all stages is selected, and
 - b) when the result of a) is the same, the seller who has offered lowest price when compared at each step from step 1, step by step, to a appropriate step is selected.

In case 2), the problem can be solved by manifesting in agreement that a seller should provide a price which is the same as or lower than the price of previous step.

Reverse auction method, as illustrated in flowchart of Fig. 4, is another method for generating minimum price. To the seller system (11, 12, 13, ..., 1M) which are included in the DB of each seller, Server 20 sends combination of item of prospective purchase quantity and item of price so that sellers can input selling price into these item (S121). Each seller system (11, 12, 13, ..., 1M) sends reverse auction information which is favorable to them in real time within a predetermined time period. Real time transmission of reverse auction information means that, when change is occurred while monitoring the change of minimum price list of the server in the participating seller system, the minimum price information is updated in the minimum price list if there is an offer to bid at a lower price than the lowest price in each step (S122). Server 20 determines the price list at the closing time of the predetermined time period as the minimum price list. In determining minimum price, since there is a possibility of bidding error when sellers compete because of transmission delay, while determining on the basis of predetermined time period, final minimum price list is determined when the number of participating in the auction within predetermined time period is completed, this number being set per seller. The process of determining minimum price is the same as the process of step 113 (S123).

Input method from sellers as described above may be web browser method or client-server program method which can be related to other web method.

As illustrated in Fig 3 or Fig. 4, procedure 2, S2, determines final purchase price as follows using minimum price list generated.

Minimum price list generated in the above described way is sent to DB 21 of system of each member purchaser (31, 32, 33, ..., 3N). In this way, by providing price list of cooperative buying which is adjusted downward according to the purchase quantity, purchaser can select desirable purchase price of goods.(S21)

Each of the purchasers (31, 32, 33, ..., 3N) sends purchase offer at desired purchase price to the server 20 considering minimum price list provided by server 20(S22). The interface with purchaser can be web browser method or client-server program method which can be related to other web method.

Server 20 generates accumulated value of purchase amount in real time using the purchase amount information received from the purchase(31, 32, 33, ..., 3N) systems, outputs and stores the information in the server 20 data base. Accumulated value of purchase amount is compared with the same or below step of prospective

purchase amount range, continuously from step 1 to step K. When appropriate prospective purchase amount range exists, the “step value” of this purchase amount range is stored. After going on to the last step, the largest value of previously stored “step value” or the lowest price corresponding to the highest step is determined as the final purchase price. This final purchase price can be changed, so the step value determined at the time of closing is the optimum purchase price.

This procedure will now be described with reference to table 3.

Table 3

Step	Quantity	Minimum price list	Amount of purchase offer	Accumulated Amount of purchase offer
1	1~5	B-1	3	3
2	6~10	A-2	2	5
3	11~20	A-3	3	8
4	21~30	B-4	20	28
...

In the minimum price list generated by server 20, the quantity is the same as that of table 2 and accumulated amount increases as 3, 5, 8, 28. Accumulated amount at step 1 is “3”, and since this value is appropriate compared with the same step of prospective purchase amount range, B-1 which corresponds to this value is stored as minimum value. Accumulated amount at step 2 is “5”, and since this value is not appropriate compared with the same step of prospective purchase amount range, this value is not stored, and if this value is greater than the maximum quantity of the step, appropriate step is searched by comparing next steps of prospective purchase amount range, the corresponding value is stored as minimum value. Continuing in this way, since the value “8” of step 3 of accumulated amount of purchase offer is not appropriate but the value of step 4 is appropriate compared with the same step of prospective purchase amount range, B-4 is stored. Assuming there is no appropriate value at later steps, by comparing above stored value, B-1 and B-4, the value of higher step (smaller value) B-4 is determined as final purchase price and noticed to the purchaser (S23).

To clarify the above procedure, another actual example will be described. There can be a case when accumulated amount purchasers is as in table 4.

Table 4

Step	Quantity	Minimum price list	Determined Seller	Prospective purchase amount	Accumulated purchase amount
1	1~5	150,000	A	3	3
2	6~10	145,000	C	2	5
3	11~20	142,000	A	3	8
4	21~30	140,000	B	39	47
5	31~40	135,000	A	0	47
6	41~50	130,000	C	0	47
...
K	91~100	100,000	C	0	47

Unlike the example of table 3, Accumulate value of final purchase amount is closed at step 4 and there is no purchase offer at step 5 and 6. The purchasers increased rapidly at step 4 and accumulated amount of purchase become 47 so that optimum purchase price is determined as 130,000 of step 6, i.e. the price of step 6 corresponding to amount 41~50. When optimum purchase price is determined at the server, contracted purchasers are separated from the those who are not contracted and then server sends result information about this such as the success of contraction and information that can process contraction between seller and purchaser to the computer of client using communication network and this information is displayed on the screen. As a result, prospective purchaser can buy goods at a price which is lower than the price they wanted.

As described above, the method for providing optimum price in electronic commerce according to the present invention is advantageous to both sellers and purchasers. The method is advantageous to seller because the seller can set the price effectively according to the increase of the amount of the goods since by using the method of the present invention, the price is lowered step by step as the amount increases. So, the seller can effectively manage inventory control and futures deals since he can sell large amount of goods at small profit. The method is advantageous to the purchaser because the purchaser can request purchase at desired price since he can know in advance the information of the price lowered according to the increase of the purchase amount per step. And the purchaser can buy goods at the desired price or below that price since the final purchase price is determined

according to the accumulated amount of purchase offer of purchasers. However, when the final purchase price is determined at higher price than the desired price, the purchaser is excluded from the group of purchasers.

What is claimed is:

1. A method for providing optimum purchase price in electronic commerce
5 which uses a plurality of computers of purchasers and sellers and at least one electronic commerce server computer, said computers being interconnected each other through communication network, said electronic commerce server having a function of transferring currency having the value of real money, comprising
procedure 1, wherein minimum price information is generated by requesting
10 minimum price information which can be adjusted downward by comparing the amounts offered by a plurality of seller computers which is connected to electronic commerce server through network, and then sending said information to the seller computers with predetermined data format, and
procedure 2, which includes a program which is programmed so that said server
15 sends minimum price information generated by procedure 1 to a plurality of purchaser computers connected through network, receives purchase offer from purchasers through network after the purchasers inputs their purchase offer information in the input window of purchaser computer and determines optimum purchase price in the electronic commerce server, a program which is programmed
20 so that said server determines the success of transaction according to the determined optimum price and a program which is programmed so that said server sends the information about the result of the transaction to be displayed on the computers of sellers and purchasers interconnected through network.
- 25 2. The method of claim 1, wherein said procedure 1 comprises
step 1, wherein electronic commerce server sends request message about price information which is adjusted downward considering the amount of purchase of predetermined products to the seller computers through interconnected network,
step 2, wherein, in consequence of step 1, seller inputs price information which is
30 adjusted downward considering purchase amount step into the input window of the seller computer and this information sent to said electronic commerce server through interconnected network, and
step 3, which includes a program which is programmed so that said electronic commerce server generates minimum price list per purchase amount by comparing
35 the information of amount at each step.

3. The method of claim 1, wherein said procedure 1 comprises
step 1, wherein electronic commerce server sends information about prospective
purchasers of certain goods to a plurality of sellers through interconnected network,
step 2, wherein, after step 1 is completed, said server receives information about
5 bidding or reverse auction from seller computers through interconnected network
when certain predetermined condition is met, and
step 3, which includes a program which is programmed so that said electronic
commerce server generates minimum price list per prospective purchase amount at
the time of closing step 2.

10

4. The method of claim 3, wherein said predetermined condition is a
limited of time period within which said sellers should provide information about
bidding or reverse auction to the said server in the predetermined input window.

15

5. The method of claim 3, wherein said predetermined condition is a limit
of number of times which said sellers can provide information about bidding or
reverse auction to the said server by inputting in the predetermined input window.

6. The method of claim 1, wherein said procedure 2 comprises
20 step 1, wherein said electronic commerce server sends minimum price information
which is generated by procedure 1 to a plurality of purchaser computers through
interconnected network,
step 2, wherein electronic commerce server receives buying offer of the purchasers
at the desired price by inputting to the predetermined input window through
25 interconnected network,
step 3, which includes a program which is programmed so that said electronic
commerce server determines optimum purchase price by comparing accumulated
purchase amount and information of minimum price per amount which is generated
by procedure 1, and
30 step 4, which includes a program which is programmed so that said electronic
commerce server determine the success of purchase according to the optimum
purchase price and sends information of the result of the purchase to the seller
computers and purchaser computers to be displayed through interconnected network.

35

7. A method for providing optimum purchase price in electronic commerce
which uses a plurality of computers of purchasers and sellers and at least one

electronic commerce server computer, said computers being interconnected each other through communication network, electronic commerce server having a function of transferring currency having the value of real money, comprising

procedure 1, wherein said electronic commerce server sends request message of
5 information of minimum price of predetermined goods which is adjusted downward according to the purchase quantity with predetermined data format to the seller computers through interconnected network,

procedure 2, wherein said electronic commerce server receives information inputted by seller in the input window through the interconnected network,

10 procedure 3, which includes a program which is programmed so that said server generates minimum price list per each purchase quantity using the price information generated by procedure 2, and

procedure 4, which includes a program which is programmed so that said server sends minimum price list per each purchase quantity generated by procedure 3 to a
15 plurality of purchasers to be displayed through the interconnected network.

8. A method for providing optimum purchase price in electronic commerce which uses a plurality of computers of purchasers and sellers and at least one electronic commerce server computer, said computers being interconnected each
20 other through communication network, electronic commerce server having a function of transferring currency having the value of real money, comprising

procedure 1, wherein said electronic commerce server sends request message of information of minimum price of predetermined goods which is adjusted downward to the purchase quantity with predetermined data format to the seller computers
25 through interconnected network,

procedure 2, wherein said electronic commerce server receives information inputted by seller in the input window through the interconnected network,

procedure 3, which includes a program which is programmed so that said server generates minimum price list per each purchase quantity using the price information
30 generated by procedure 2,

procedure 4, which includes a program which is programmed so that said server sends minimum price list per each purchase quantity generated by procedure 3 to a plurality of purchasers to be displayed through the interconnected network

procedure 5, wherein, after procedure 4 is completed, electronic commerce server
35 processes information of purchase offer received through the predetermined input window from the purchaser computers through interconnected network, and

procedure 6, which includes a program which is programmed so that said server sends said processed information of procedure 5 to the purchaser computers to be displayed.

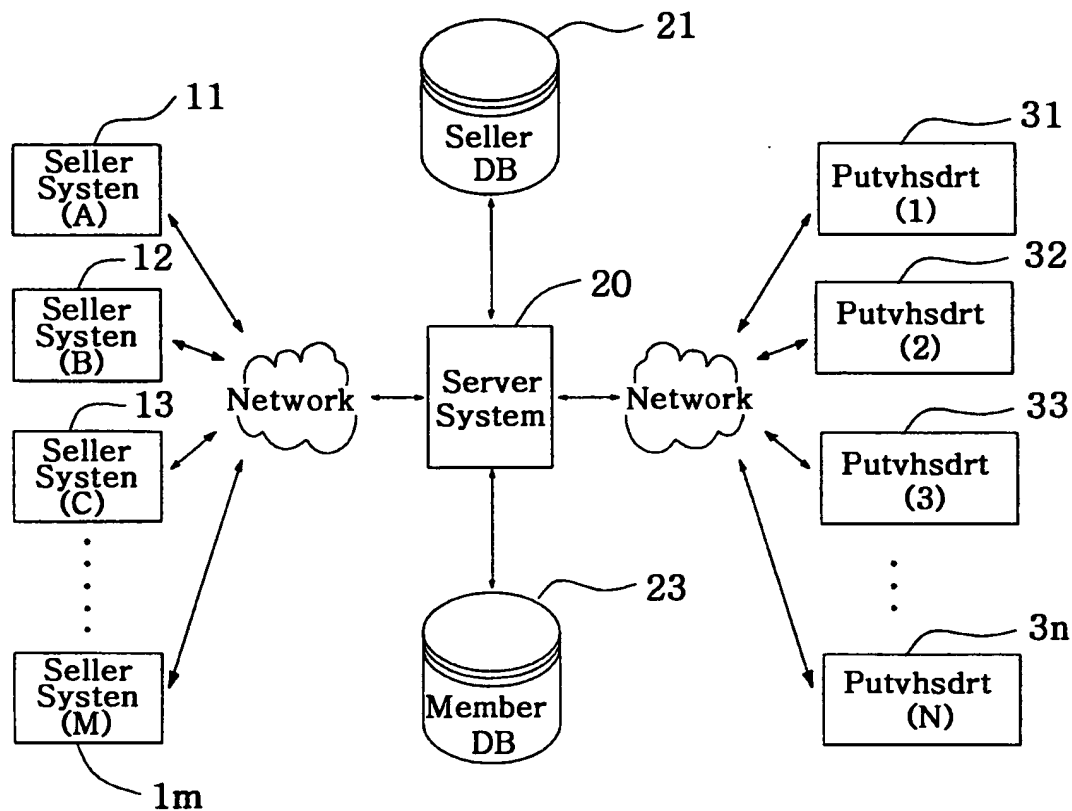
FIG. 1

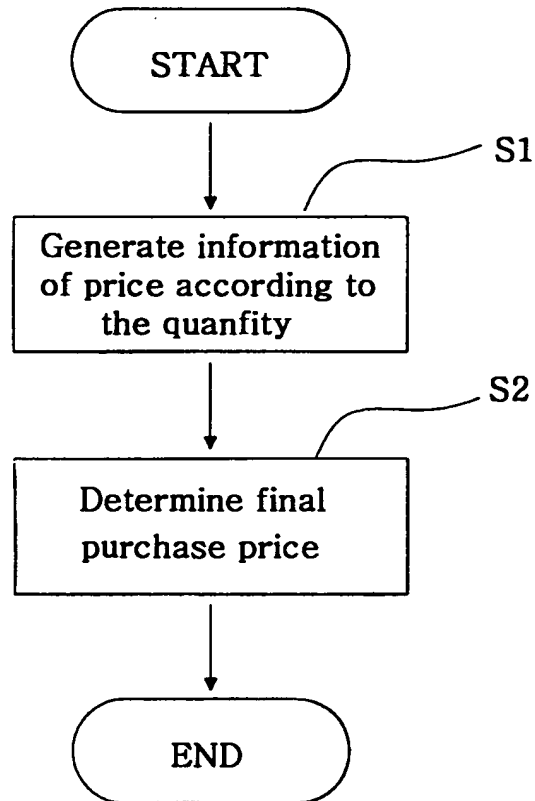
FIG. 2

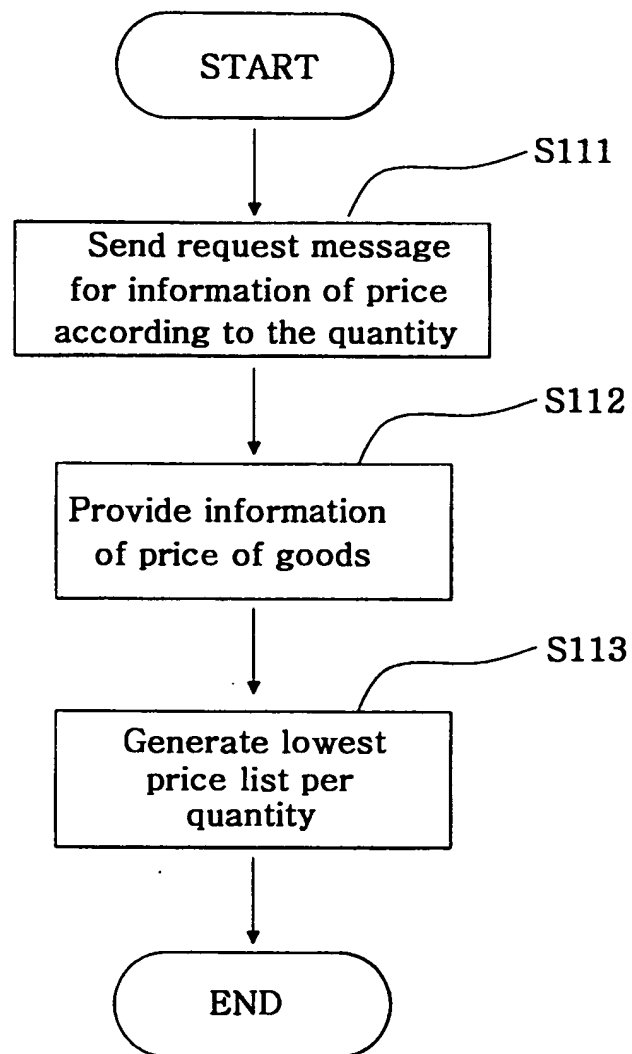
FIG. 3

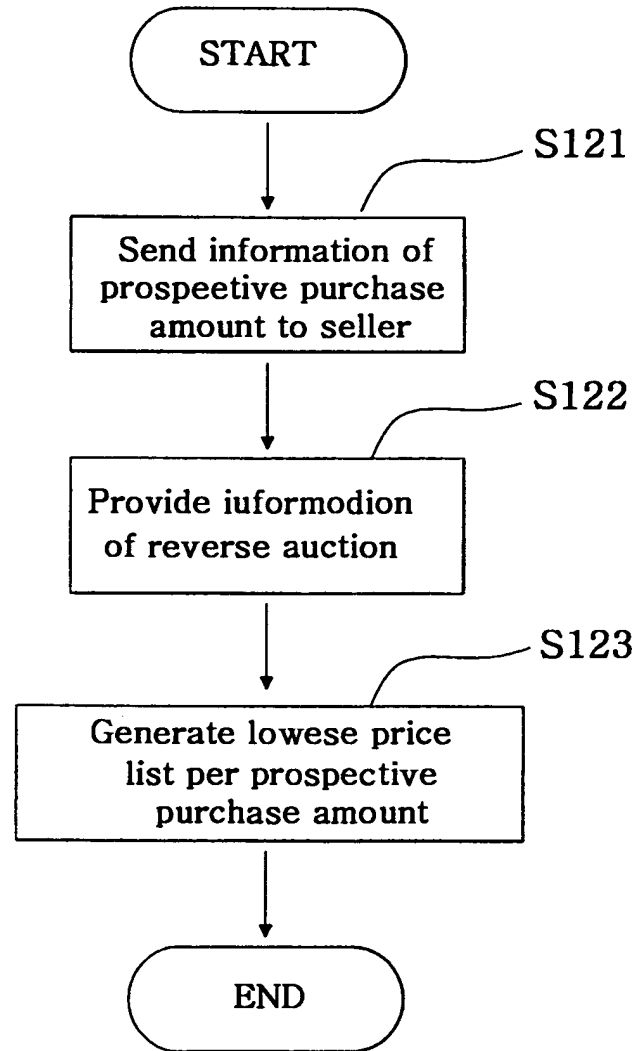
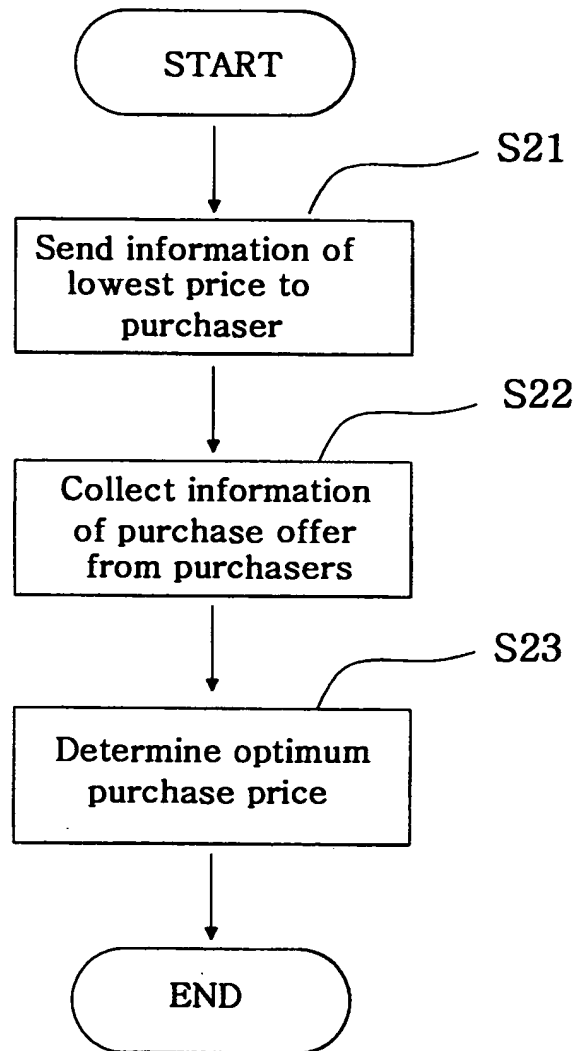
FIG. 4

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR00/01299

A. CLASSIFICATION OF SUBJECT MATTER**IPC7 G06F 17/6003**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 G06F 17/6003

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Patents and applications for inventions since 1975 and Korean Utility models and applications for Utility models since 1975
Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5794207 A (Jay S. Walker. etc) 11 AUGUST 1998 column 8, line 26 ~ column 11, line 3	1-6
Y	Fig.1	7-8
Y	KR 99-78767 A (Kim Ju Yeun) 5 NOVEMBER 1999 the whole document	1-8

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

13 MARCH 2001 (13.03.2001)

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14 MARCH 2001 (14.03.2001)

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5794207 A	11.8.98	WO 9810361 A1	12.3.98
KR 99-78767 A	5.11.99	None	